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KHAN, OMER S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,879	Applicant(s) NAGAI ET AL.	
	Examiner Omer S. Khan	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/15/2007 and 03/04/2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Regarding claims, 2, 17- 20, 33, 37, 40, and 42, the phrase "such that" and the term “relatively” renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Applicant has frequently used a phrase “such that” and twice the term “relatively” in the claim language. These phrases and terms have to be deleted everywhere they appear in the claim language of this application. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A: US 6107910 A by Nysen, and further in view of Reference B: Rodger in US 6362737 and further in view of Reference C: US 5940006 by Maclellan.

Consider claims 1, 27 and 28, Nysen discloses an endpoint device for use in a communication system wherein the endpoint device which has received an interrogating signal containing a main carrier and transmitted from an interrogator responds to the interrogator with a reflected signal which is generated by modulating the main carrier with appropriate information, **(See reference A, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a transponder or a tag for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** Nysen discloses the said endpoint device comprising a distance detecting portion operable to detect a distance between said interrogator and said endpoint device, **(See reference A, Fig 36-38, col. 34 l. 48 col. 35 l. 38, where Nysen discusses a transponder comprises a distance measuring mechanism that measures a distance between the interrogator and the tag).** Nysen discloses a reflecting portion operable to receive and reflect said interrogating signal transmitted from said interrogator, **(See reference A, Abstract, col. 4 l. 57-65, col. 8. l. 48- 64, where Nysen discusses a backscatter component for receiving a ping and transmitting a ping response).** Nysen discloses an information generating portion operable to generate replying information to be transmitted to said interrogator, **(See reference A, col. 14 l. 56-67, where Nysen discusses a microprocessor 76 for generating a response for interrogation).** Rodger 6362737 in view of Nysen discloses a band determining portion operable to determine, on the basis of said distance detected by said distance detecting portion, **(Reference B, col. 2 l. 20 25, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is**

determined based on the signal strength that is inversely proportional to the distance i.e. the range of frequencies includes a resonance frequency of each tag which varies based on a mutual inductance occurring between the antenna coils of overlapped tags. Applicant may also see US 6346884). Nysen discloses a frequency band of a modulating signal used to modulate a reflected signal generated by said reflecting portion, **(See reference A, col. 8. l. 48- 64, col. 14 l. 45-63, where Nysen discusses a frequency band used to modulate the back scatter signal).** Nysen discloses a modulating signal generating portion operable, according to said replying information generated by said information generating portion, **(See reference A, Fig 30, col. 9 l. 49-67, where Nysen discusses a frequency modulator 420 used to modulate the response for interrogation signal based on the reply received from the processor).** Nysen discloses the modulator generate said modulating signal having a frequency within said frequency band determined by said band determining portion, **(See reference A, col. 14 l. 45-63, col. 31 l. 54-67, where Nysen discusses the generation of modulating signal within a frequency band 905-925 MHz).** Maclellan 5940006 in view of Nysen discloses the said endpoint device comprising a frequency determining portion operable to determine a frequency of a subcarrier signal used by the endpoint device, within an available frequency band which has been determined by said interrogator, **(See reference C, Fig 9, col. 11 l. 31-50, where Maclellan discusses the tag is design to determining the frequency of a sub carrier signal within the frequency band).** Maclellan in view of Nysen a frequency utilization ratio setting portion operable to set a distribution of a frequency utilization

ratio of a subcarrier signal used to modulate said main carrier, **(See reference C, Fig 8, col. 12 l. 5-30, where Maclellan discusses the system is design to set the distribution frequency in ratio such as channels by selecting one of predetermine frequency channel within the entire frequency range of the subcarrier signals).** Maclellan in view of Nysen discloses the over a predetermined range of frequency of the subcarrier signal which consists of a plurality of mutually adjacent frequency channels, **(See reference C, col. 12 l. 50-53, where Maclellan discusses the sub carrier signal consists of a multiple adjacent frequency channels in a predetermined range).** Maclellan in view of Nysen discloses a frequency determining portion operable on the basis of the distribution of the frequency utilization ratio set by said frequency utilization ratio setting portion, **(See reference C, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).** Maclellan discloses the tag is design to determine a frequency of said subcarrier signal, by random selection within said predetermined range of frequency, **(See reference C, col. 11 l. 31-50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping).**

Consider claims 1- 44, Neysen does not specifically discloses a band determined based on the distance detected, and other limitations in this application that directly depend on this limitation; nevertheless, it would be obvious to one of ordinary skill in the

art at the time of invention to modify the invention of Nysen and design this system with a feedback element in fig 44A to determine the band based on signals amplitude, and integrate most of the circuitry in the interrogator to reduce the size and the cost of the transponder as taught by Rodger to design a system that can communicate in multiple band in an effort to reduce power consumption and tag collision by the system, **(See Reference B col. 1 l. 38-45 and col. 2 l. 4-8).**

Consider claims 1- 44, Nysen does not specifically discloses a subcarrier signal, and other limitations in this application that directly depend on this limitation; nevertheless, it would be obvious to one of ordinary skill in the art at the time of invention to modify the invention of Nysen and design this system where the main carrier comprises subcarrier frequency as taught by Maclellan in an effort to reduce the cost and collision of the tags and increase amount of tags that can communicated with the interrogator in a small period, **(See Reference C col. 1 l. 30-36).**

Consider claims 12, and 13, Nysen discloses a communication system including an interrogator operable to transmit an interrogating signal containing a main carrier, and an endpoint device operable to receive the interrogating signal and respond to the interrogator with a reflected signal which is generated by modulating the main carrier with appropriate information, **(See reference A, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a transponder or a tag for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or**

reader).

Nysen discloses wherein an improvement comprises, said interrogator including a distance detecting portion operable to detect a distance between said interrogator and said endpoint device, **(See reference A, Fig 36-38, col. 38 l. 34-40, where Nysen discusses the interrogator comprises a distance measuring mechanism that measures a distance between the interrogator and the tag).** Nysen discloses the distance is measure on the basis of an intensity of a modulating signal with which said reflected signal has been modulated in said endpoint device, **(See reference A, Fig 36-38, col. 34 l. 48 col. 35 l. 38, col. 38 l. 34-40, where Nysen discusses the distance is measured based on the strength of the signal).** Nysen discloses the said interrogator further including a distance information transmitting portion operable to transmit to said endpoint device distance information indicative of the distance detected by said distance detecting portion, **(See reference A, Fig 44A, col. 38 l. 15-40, where Nysen discusses a transmitter for transmitting the signal and the circuitry for detecting the distance of that signal).** Nysen discloses the said interrogator including a communication condition detecting portion operable to detect a condition of communication of the interrogator with said at least one endpoint device, **(See reference A, col. 38 l. 34-40, where discusses a system for checking the communication condition i.e. signal strength).** Rodger discloses a frequency band is determined on the basis of said condition of communication detected by said communication condition detecting portion, **(See Reference B, col. 11 l. 66 – col. 12 l.**

16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance). Maclellan in view of Nysen discloses an available band determining portion operable to determine an available frequency band of a subcarrier signal available for said at least one endpoint device, **(See reference C, Fig 9, col. 11 l. 31-50, where Maclellan discusses the interrogator is design to determining the frequency of a sub carrier signal within the frequency band).** Maclellan discloses a band information transmitting portion operable to transmit to each endpoint device band information representative of said available frequency band of said subcarrier signal determined by said available band determining portion, **(See reference C, Fig 9 and 10, col. 11 l. 31-50, where Maclellan discusses the tag comprises a transmitter and the tag is design to determining the transmission the frequency of a sub carrier signal within the frequency band).**

Nysen discloses the said endpoint device including, a reflecting portion operable to receive said interrogating signal containing said main carrier, and transmit said reflected signal to said interrogator, **(See reference A, Abstract, col. 4 l. 57-65, col. 8. l. 48- 64, where Nysen discusses a backscatter component for receiving a ping and transmitting a ping response).** Nysen discloses an information generating portion operable to generate replying information to be transmitted to said interrogator, **(See reference A, col. 14 l. 56-67, where Nysen discusses a microprocessor 76 for generating a response for interrogation).** Rodger discloses a band determining portion operable to determine a frequency band of said modulating signal, on the basis

of said distance information received from said distance information transmitting portion, **(See Reference B, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance where the processor can be program to determine the band).** Nysen discloses a modulating signal generating portion operable, according to said replying information generated by said information generating portion, **(See reference A, Fig 30, col. 9 l. 49-67, where Nysen discusses a frequency modulator 420 used to modulate the response for interrogation signal based on the reply received from the processor).** Nysen discloses the modulating signal is generated having a frequency within said frequency band determined by said band determining portion, **(See reference A, col. 14 l. 45-63, col. 31 l. 54-67, where Nysen discusses the generation of modulating signal within a frequency band 905-925 MHz).** Maclellan discloses the said each endpoint device being including a frequency determining portion operable to determine a frequency of said subcarrier signal within said available frequency band represented by said band information received from said band information transmitting portion of said interrogator, **(See reference C, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).**

Consider claims 36 and 39, Nysen discloses a communication system including an interrogator having a transmitting portion operable to transmit an interrogating signal containing a main carrier, and a plurality of endpoint devices each operable to receive

the interrogating signal and respond to the interrogator with a reflected signal which is generated by modulating the main carrier with appropriate information, wherein an improvement comprises, **(See reference A, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a set of transponders or tags for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** Maclellan discloses the said each endpoint device including an individual frequency utilization ratio setting portion operable to set a distribution of an individual frequency utilization ratio of a subcarrier signal used to modulate said main carrier, **(See reference C, Fig 8, col. 12 l. 5-30, where Maclellan discusses the tag is design to set the distribution frequency in ratio such as channels by selecting one of predetermine frequency channel within the entire frequency range of the subcarrier signals).** Maclellan discloses the main carrier is modulated over a predetermined range of frequency of the subcarrier signal which consists of a plurality of mutually adjacent frequency channels, **(See reference C, col. 12 l. 50-53, where Maclellan discusses the sub carrier signal consists of a multiple adjacent frequency channels in a predetermined range).** Maclellan discloses a frequency determining portion operable on the basis of the distribution of the individual frequency utilization ratio set by said individual frequency utilization ratio setting portion, **(See reference C, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).** Maclellan discloses the tag is design to determine a frequency of said subcarrier signal, by random selection within said predetermined range of frequency,

(See reference C, col. 11 l. 31-50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping). Nysen discloses a power source device, **(See reference A, col. 13 l. 38-40, where Nysen discusses tag comprises a power source or obtain energy from the RF signal where the coil becomes the power source).** Nysen discloses a power source information detecting portion operable to detect supply voltage information indicative of a supply voltage of said power source device, **(See reference A, col. 13 l. 38-40, col. 35 l. 59-67, where discusses the RF signal contains RF energy and signal strength translates the power information).**

Nysen discloses the said interrogator including an overall frequency utilization ratio determining portion operable to determine a distribution of an overall frequency utilization ratio of the reflected signal received from said plurality of endpoint devices, **(See reference A, col. 38 l. 41-46, where Nysen discusses the interrogator is design to set the distribution frequency in ratio using the backscatter information).** Nysen discloses an endpoint device monitoring portion operable on the basis of said supply voltage information received from said power source information detecting portion, **(See reference A, Fig 36-38, col. 38 l. 34-40, where Nysen discusses the interrogator is capable of monitoring a distance between the interrogator and the tag based on signal strength).** Nysen discloses the interrogator is capable to determines one of a plurality of predetermined supply voltage ranges in

which the supply voltage of said power source device detected by said power source information detecting portion of said each endpoint device falls, **(See reference A, Fig 36-38, col. 34 l. 48 col. 35 l. 38, col. 38 l. 34-40, where Nysen discusses the distance is measured based on the different levels of the signal strength).** Nysen discloses a switching information generating portion operable on the basis of the distribution of said overall frequency utilization ratio determined by said overall frequency utilization ratio determining portion, **(See reference A, col. 38 l. 41-46, where Nysen discusses a processor for generating an interrogation signal based on distribution frequency).** Rodger discloses the processor is operable on the basis of the result of determination by said endpoint device monitoring portion, **(See Reference B, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance).** Maclellan discloses the interrogator is design to generate switching information on the basis of which said individual frequency utilization ratio determining portion of said each endpoint device sets the distribution of said individual frequency utilization ratio of the subcarrier signal, **(See reference C, Fig 9, col. 11 l. 31-50, where Maclellan discusses the tag is design to determining the frequency of a sub carrier signal within the frequency band).** Maclellan discloses the said transmitting portion of said interrogator being operable to transmit said interrogating signal containing said main carrier and said switching information generated by said switching information generating portion, **(See reference C, Fig 9 and 10, col. 11 l. 31-50, where Maclellan discusses the interrogator comprises a transmitter and the interrogator**

determines the transmission frequency of a sub carrier signal within the frequency band). Maclellan discloses the said individual frequency utilization ratio setting portion being operable to set the distribution of said individual frequency utilization ratio of the subcarrier signal of said each endpoint device, **(See reference C, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer capable of determining the individual frequency of the sub carrier signal).** on the basis of said switching information generated by said switching information generating portion and said supply voltage of said power source device detected by said power source information detecting portion, **(See reference C, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor after the comparison of signal's strength).**

Consider claim 26, 43, and 44, Nysen discloses an interrogator for use in a communication system wherein a plurality of endpoint devices which have received an interrogating signal containing a main carrier and transmitted from the interrogator respond to the interrogator with respective reflected signals which are generated by modulating the main carrier with appropriate information, **(See reference A, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a set of transponders or tags for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** Nysen discloses the said interrogator comprising an overall frequency utilization ratio determining portion operable to determine a

distribution of an overall frequency utilization ratio of the reflected signals received from said plurality of endpoint devices, **(See reference A, col. 38 l. 41-46, where Nysen discusses the interrogator is design to set the distribution frequency in ratio using the backscatter information of a plurality of tags).** Nysen discloses an endpoint device monitoring portion operable on the basis of supply voltage information which has been received from each of said endpoint devices and which is indicative of a supply voltage of said each endpoint device, to determine one of a plurality of predetermined supply voltage ranges in which the supply voltage of said each endpoint device falls, **(See reference A, Fig 36-38, col. 34 l. 48 col. 35 l. 38, col. 38 l. 34-40, where Nysen discusses the interrogator is capable of monitoring the tags and the distance is measured based on the different levels of the signal strength).** Nysen discloses a switching information generating portion operable on the basis of the distribution of said overall frequency utilization ratio determined by said overall frequency utilization ratio determining portion, **(See reference A, col. 38 l. 41-46, where Nysen discusses a processor for generating an interrogation signal based on distribution frequency).** Rodger discloses a result of determination by said endpoint device monitoring portion, to generate switching information on the basis of which said each endpoint device sets a distribution of an individual frequency utilization ratio, **(See Reference B, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance, and each tag has an individual frequency channel).** Nysen discloses a transmitting portion operable to transmit said interrogating signal

containing said main carrier and said switching information generated by said switching information generating portion, **(See reference A, col. 9 l. 17-26, col. 38 l. 41-46, a transmission of signal containing main carrier and the frequency determination generated by the processor).** Nysen discloses a communication condition detecting portion operable to detect a condition of communication of the interrogator with each endpoint device, **(See reference A, col. 38 l. 34-40, where discusses a system for checking the communication condition i.e. signal strength).** Maclellan discloses an available band determining portion operable to determine an available frequency band of a subcarrier signal available for said at least one endpoint device, **(See reference C, Fig 9, col. 11 l. 31-50, where Maclellan discusses the interrogator is design to determining the frequency of a sub carrier signal within the frequency band).** Rodger discloses the band is determine on the basis of said condition of communication detected by said communication condition detecting portion, **(See Reference B, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance).** Maclellan discloses a band information transmitting portion operable to transmit to each endpoint device band information representative of said available frequency band of said subcarrier signal determined by said available band determining portion, **(See reference C, Fig 9 and 10, col. 11 l. 31-50, where Maclellan discusses the interrogator comprises a transmitter and the interrogator determines the transmission frequency of a sub carrier signal within the frequency band).**

Consider claim 2, Rodger discloses the endpoint device according to claim 1, wherein said band determining portion is operable to determine said frequency band such that a center frequency of the determined frequency band increases with a decrease in said distance detected by said distance detecting portion, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a band is determined where the frequency shift with respect to the distance which is inversely proportional to the amplitude, lower bands carry more RF energy than the higher bands; therefore, the frequency will increase as distance decreases).**

Consider claims 3, 4 and 5, the combination of Nysen and Rodger teaches the endpoint device according to claim 1, wherein said band determining portion is operable to determine said frequency band on the basis of said distance detected by said distance detecting portion, and according to a predetermined data table representative of a relationship between a plurality of ranges of said distance and a plurality of frequency bands which respectively correspond to said plurality of ranges of said distance and each of which consists of a group of a plurality of mutually adjacent frequency channels, said band determining portion being operable to select, randomly or according to a predetermined rule, one of said plurality of channels of the group corresponding to one of said plurality of ranges to which the distance detected by said distance detecting portion belongs, and according to a predetermined data table representative of a relationship between said distance and said frequency band, **(Reference B, Fig 3, col. 11 l. 66 – col. 13 l. 23, col. 17 l.1 -45, where Rodger**

discusses a band is determined based on the signal strength that is inversely proportional to the distance and a table derived from a mathematical equation as a function amplitude vs. frequency, i.e. the range of frequencies includes a resonance frequency of each tag which varies based on a mutual inductance occurring between the antenna coils of overlapped tag. Select channels of corresponding to the ranges to which the distance detected according to a pseudo-random frequency hopping algorithm representing the distance and their frequency band).

Consider claim 6, Maclellan discloses the endpoint device according to claim 1 wherein said modulating-signal generating portion is operable to generate said modulating signal in one of a plurality of time frames which is selected randomly or according to a predetermined rule, **(See reference C, col. 11 l. 5 – col. 12 l. 63, where MacLellan discusses the frequency synthesizer generates signal in pseudo-random time slots for freq hopping).**

Consider claim 7, Maclellan discloses the endpoint device according to claim 1, wherein said modulating-signal generating portion maintains the frequency band determined by said band determining portion, until transmission of said replying information to said interrogator is completed, **(See reference C, col. 11 l. 5 – col. 12 l. 63, where MacLellan discusses the modulator maintains the frequency until transmission is completed)**

Consider claims 8, 9, 10, and 11, the combination of Nysen and Rodger teaches the endpoint device according to claim 1, further comprising a charging portion operable to charge the endpoint device with an electric energy derived from said interrogating signal, and wherein said charging portion activating the endpoint device when an amount of said electric energy stored in said endpoint device has reached a predetermined value, the said distance detecting portion is operable to detect said distance between said interrogator and said endpoint device, on the basis of a change of the electric energy with which the endpoint device is charged by said charging portion, a voltage detecting portion operable to detect a voltage of said charging portion, and wherein said distance detecting device detects the change of said electric energy on the basis of the voltage detected by said voltage detecting portion, wherein said distance detecting portion is operable to detect said distance on the basis of an intensity of said interrogating signal, **(Reference A, Fig 36-38, col. 34 l. 48 col. 35 l. 38, where Nysen discusses the tag is supplied with an RF energy of the signal, i.e. the range of frequencies includes a resonance frequency of each tag which varies based on a mutual inductance occurring between the antenna coils of overlapped tag. The coil stores the charge and act as a primary or secondary voltage supply for the tag and the charge depends on the intensity of the signal).**

Consider claim 29, Nysen discloses the endpoint device according to claim 28, further comprising a power source device, and a power-source-information detecting

portion operable to detect an operating state of said power source device, **(See reference A, col. 13 l. 38-40, col. 35 l. 59-67, where Nysen discusses tag comprises a power source or obtain energy from the RF signal where the coil becomes the power source, and the RF signal contains RF energy and signal strength translates the power information).** Rodger discloses wherein said frequency-utilization-ratio setting portion is operable on the basis of the operating state of said power source device detected by said power-source-information detecting portion, to set the distribution of the frequency utilization ratio of the subcarrier signal, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a band is determined where the frequency shift with respect to the power that is detected, and lower bands carry more RF energy than the higher bands; therefore, the frequency will increase as distance decreases in order to set the subscan frequency).**

Consider claim 30, Rodger discloses the endpoint device according to claim 29, wherein said frequency-utilization-ratio setting portion is operable to lower a center frequency of the distribution of the frequency utilization ratio of the subcarrier signal, when a supply voltage of said power source device detected by the power-source-information detecting portion is lower than a predetermined threshold value, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of lower bands of a subscan, lower bands carry more RF energy than the higher bands; therefore, lowering the frequency will help the signal reach tags at a far distance).**

Consider claim 31, Rodger discloses the endpoint device according to claim 29, wherein said frequency-utilization-ratio setting portion is operable to raise a center frequency of the distribution of the frequency utilization ratio of the subcarrier signal, when a supply voltage of said power source device detected by the power-source-information detecting portion is higher than a predetermined threshold value, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags and save power consumption).**

Consider claim 32, Maclellan discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to select one of a plurality of different frequency-utilization-ratio distribution patterns each of which represents a relationship between said plurality of mutually adjacent frequency channels and said frequency utilization ratio of the subcarrier signal, said endpoint device including a memory storing data table representative of said different frequency-utilization-ratio distribution patterns, said frequency determining portion being operable to hop the frequency of the subcarrier signal according to the selected one of said different frequency-utilization-ratio distribution pattern, **(See reference C, Fig 8, col. 12 l. 5-30, where Maclellan discusses the system is design to frequency channel within the entire frequency range of the subcarrier signals, the tag comprises the**

memory containing an algorithm for frequency distribution and the frequency hopping of the sub carrier signal using the algorithm).

Consider claim 33, the combination of Nysen and Rodger discloses, the endpoint device according to claim 28, further comprising a power source device, and wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal such that a center frequency of said distribution is lower when said power source device is a primary battery cell, than when said power source device is other than said primary battery cell, **(See Reference A, col. 12 l. 45-54 and col. 13 l. 38-40, where Nysen discusses the transponder may and active such as a tag with an internal battery or a passive transponder a tag without internal battery and it is know to use lower frequency band with passive transponder because they totally depend on RF energy of a signal).**

3. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A: US 6107910 A by Nysen, and further in view of Reference B: Rodger in US 6362737 and further in view of Reference C: US 5940006 by Maclellan, and further in view of Reference D: US 20010020897 by Takatori, Sunao et al.

Consider claim 34, Takatori discloses the endpoint device according to claim 28, further comprising a solar cell as a power source device, **(See Reference D, abstract and PP 26)**

Consider claim 34, Nysen does not specifically discloses the endpoint device comprising a solar cell as a power source device; nevertheless, it would be obvious to one of ordinary skill in the art at the time of invention to modify the invention of Nysen and design the tag with a solar cell as a power source as taught by Takatori to design a system in an effort to reduce the cost of power consumption by the tag, **(See Reference D PP 13-14).**

Consider claim 35, Nysen discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal, by changing at least an amount of data transmitted with said reflected signal and a time period during which said reflected signal is transmitted, each time the reflected signal having a selected one of said mutually adjacent frequency channels is transmitted, **(See reference A, col. 11 l. 5 –col. 12 l. 64, where Nysen discusses the system is design to set or shift the subcarrier frequency by changing the length of transmission of the backscatter signal i.e. changing the period of the duty cycle by changing the frequency, every time the backscatter signal transmitted one of the adjacent frequency channels).**

Consider claim 14, Rodger discloses the communication system according to claim 13, wherein said available-band determining portion is operable to change an upper limit of said available frequency band on the basis of said condition of communication detected by said communication-condition detecting portion, **(See**

Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags and save power consumption when the tag is in a good communication range).

Consider claims 15 and 16, Rodger discloses the communication system according to claim 13, wherein said communication-condition detecting portion [in the interrogator] is operable to detect said condition of communication, on the basis of at least one of a collision rate among the reflected signals transmitted from a plurality of endpoint devices, the number of occurrences of collision among the reflected signals transmitted from said plurality of endpoint devices per unit time, and an amount of error data contained in said reflected signal transmitted, from each endpoint device, **(See Reference B, Table 1 and 2, col. 18 l. 48-52, where Rodger teaches a system that comprises a tag interface detector that operates based on range of Q, the quality index of a signal, and amount of noise received i.e. SNR).**

Consider claim 17, Rodger discloses the communication system according to claim 15, wherein said, available-band determining portion is operable to determine said available frequency band such that an upper limit of said available frequency band increases with an increase in said number of said at least one of said at least one endpoint device, which number is detected by said communication-condition detecting portion, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a**

use of frequency bands where the number subscan will increase as the number tag increase).

Consider claim 18, Rodger discloses the communication system according to claim 17, wherein said available-band determining portion is operable to determine said available frequency band such that an upper limit of said available frequency band increases with an increase in said at least one of said collision rate, said number of occurrences of collision and said amount of error data, which has been detected by said communication-condition detecting portion, **(See Reference B, col. 11 l. 66 – col. 13 l. 23, Table 1 and 2, where Rodger discusses a use of frequency bands where the number subscan will increase as the Q, the quality index of a signal decreases, and amount of noise received increases i.e. SNR).**

4. Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A: US 6107910 A by Nysen, and further in view of Reference B: Rodger in US 6362737 and further in view of Reference C: US 5940006 by Maclellan, and further in view of Reference E: US 6792276 by Butovitsch; Peter et al.

Consider claim 19, Butovitsch discloses the communication system according to claim 15, wherein said available-band determining portion is operable to determine said available frequency band such that an upper limit of said available frequency band is

increased when the number of said at least one endpoint device which has been detected by said communication-condition detecting portion is equal to or larger than a predetermined first threshold value, and decreased when said number is reduced when said number is equal to or smaller than a predetermined second threshold value, **(See Reference E, abstract, and col. 2 l. 14-48, where Butovitsch discusses a use of frequency bands where the number subcarrier will increase as the number tag increase, depending on the size of band each band will carry only a limited number of subcarrier).**

Consider claim 19-24, Nysen does not specifically discloses the threshold values of collision rate before increasing the frequency band and the limitation directly dependent on this limitation; nevertheless, it would be obvious to one of ordinary skill in the art at the time of invention to modify the invention of Nysen and design the system where the once system receives threshold values of collision rate or noise, the frequency band modifies to eliminate the noise as taught by Butovitsch to design a system in an effort to increase the capacity of communication network and eliminate excess interference, **(See Reference E col. 3 l. 39-46).**

Consider claim 20, Butovitsch discloses the communication system according to claim 17, wherein said available-band determining portion is operable to determine said available frequency band such that an upper limit of said available frequency band is increased when said collision rate, said number of occurrences of collision or said

amount of error data which has been detected by said communication-condition detecting portion is equal to or larger than a predetermined first threshold value, and decreased when said collision rate, said number of occurrences of collision or said amount of error data is equal to or smaller than a predetermined second threshold value, **(See Reference E, abstract, and col. 2 l. 14-48, col. 6 38-42, col. 7l. 29-51, where Butovitsch discusses a use of frequency bands is based on the number subcarrier interference and the threshold value before handoff).**

Consider claims 21 and 22, Butovitsch discloses the communication system according to claim 19, wherein said available-band determining means is operable to adjust said first and second threshold values on the basis of the number of said at least one endpoint device which has been detected by said communication-condition detecting portion, and on the basis of said collision rate, said number of occurrences of collision or said amount of error data which has been detected by said communication-condition detecting portion, **(See Reference E, abstract, and col. 2 l. 14-48, col. 6 38-42, col. 7l. 29-51, where Butovitsch discusses adjustment to frequency band values as a function of the number of tags are detected and the range of Q, the quality index of a signal, and amount of noise received i.e. SNR).**

Consider claims 23 and 24, Butovitsch discloses the communication system according to claim 13, wherein said available-band determining portion is operable to set an upper limit of said available frequency band at a maximum and a minimum value

in an initial state of the communication system, **(See Reference E, col. 2 l. 14-48, col. 6 38-42, col. 7l. 1-51, where Butovitsch discusses adjustment to frequency band values as a function of the number of tags are detected and the range of Q, the quality index of a signal, and amount of noise received i.e. SNR).**

Consider claim 25, Maclellan discloses the communication system according to claim 13, wherein said frequency determining -portion of said each endpoint device is operable to determine the frequency of said subcarrier signal, by selecting, by means of random hopping or according to a predetermined rule of hopping, one of a plurality of frequency channels set within said available frequency band determined by said available-band determining portion of said interrogator, said frequency determining portion **(See reference C, col. 11 l. 31-50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping).**

Consider claim 37, 38, 40 and 41, Maclellan discloses the communication system according to claim 36, wherein said switching-information generating portion is operable to generate the switching information for raising a center frequency of the distribution of said individual frequency utilization ratio of the subcarrier signal of said each endpoint device, when said overall-frequency-utilization ratio determining portion determines that said overall frequency utilization ratio of said reflected signals in ~~relatively~~ low frequency channels of said predetermined range of frequency of the

subcarrier signal is higher than a predetermined threshold value, **(See reference C, col. 11 l. 5- col. 12 l. 63, where MacLellan, discusses the processor to adjust the center frequency of the subcarrier signal according to the channels that are receiving the backscatter signals of a high and low frequency subcarrier signal).**

Consider claim 42, Nysen discloses the endpoint device according to claim 39, wherein said plurality of endpoint devices include at least one first endpoint device wherein a primary battery cell is provided as said power source device, and at least one second endpoint device wherein a secondary battery cell is provided as said power source device [the secondary battery is provided in addition to a primary battery or a coil ?], said switching-information generating portion being operable to generate the switching information that causes said individual-frequency-utilization-ratio setting portion of each of said at least one first endpoint device to set the distribution of said individual frequency utilization ratio of the subcarrier signal such that a center frequency of the distribution of said individual frequency utilization ratio of the subcarrier signal of said each first endpoint device is lower that that of said each second endpoint device, **(See reference , col. 13 l. 37- col. 14 l. 63, and col. 35 l. 40 - col. 36 l. 25,where Nysen discusses the some tags may include more than power source, i.e. battery cell, and the processor identifies the tags and set the channel of the carrier signal lower for a single cell tags in order to deliver more RF energy than tags with a secondary power source).**

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5686902 by Reis; Robert Steven et al. where he discusses Communication system for communicating with tags and US 5621412 by Sharpe; Claude A. et al. where he discusses Multi-stage transponder wake-up, method and structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omer S. Khan whose telephone number is (571)270-5146. The examiner can normally be reached on M-F 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian A. Zimmerman can be reached on 571-272-3059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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